First Five-Year Review Report

Ordnance Works Disposal Area Site

Morgantown, Monongalia County, West Virginia

Prepared By:

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9/18/06
Date

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ORDNANCE WORKS DISPOSAL AREA
FIVE-YEAR REVIEW REPORT NO. 1

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LIST OF ACRONYMS

µg/L	micrograms per Liter
ABS	ABS Environmental Services, Inc.
ARARs	Applicable or Relevant and Appropriate Requirements
bgs	below ground surface
BOD	Biochemical oxygen demand
BTAG	USEPA Biological Technical Assistance Group
BTU	British Thermal Unit
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COPC	Contaminant of Potential Concern
cPAH	Carcinogenic Polynuclear Aromatic Hydrocarbon
CY	cubic yards
DoD	Department of Defense
DuPont	E.I. DuPont de Nemours and Company
HI	Hazard Index
EA	Endangerment Assessment
Ecotune	Ecotune Environmental Consultants
ERI	Ecological Restoration, Inc.
ESC	Environmental Strategies Corporation
FAQs	Frequently-Asked Questions
FIT	Field Investigation Team
FR	Federal Register
FS	Feasibility Study
FYR	Five-Year Review
GE	General Electric
GTPP	Grant Town Power Plant, American Bituminous Power Partners, LP
HI	Hazard Index
ILCR	Increased Lifetime Cancer Risk
IRIS	USEPA's Integrated Risk Information System Database
Law	Law Engineering and Environmental Services, Inc.
MDC	Maximum Detected Concentrations
MDL	method detection limit
mg/kg	milligrams per kilogram

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LIST OF ACRONYMS (continued)

MIP	Morgantown Industrial Park
MIPA	Morgantown Industrial Park Associates, Limited Partnership
MOW	Morgantown Ordnance Works
MSL	mean sea level
NCP	National Contingency Plan
NHANES III	National Health and Nutrition Evaluation Survey
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
O&M	Operation and Maintenance
OU-1	Operable Unit 1
OU-2	Operable Unit 2
OWDA	Ordnance Works Disposal Area
OWR	WVDEP Office of Water Resources
PAH	Polynuclear Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PM	Project Manager
ppm	Parts per million (mg/l)
PQL	Practical Quantitation Limit
PRP	Potentially Responsible Party
RAGS	Risk Assessment Guidance for Superfund
RAO	Remedial Action Objective
RBC	Risk-Based Concentration
RCRA	Resource Conservation and Recovery Act
RfD	Reference Dose
RFW	Roy F. Weston, Inc.
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act of 1986
SES	Sevenson Environmental Services
SF	Slope Factor
SVOCs	semivolatilte organic compounds
TAL	Target Analyte List

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LIST OF ACRONYMS (continued)

TBCs	To Be Considereds
TCLP	Toxicity Characteristic Leaching Procedure
USACE	US Army Corps of Engineers
USEPA	US Environmental Protection Agency
WVDEP	West Virginia Department of Environmental Protection

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EXECUTIVE SUMMARY

USEPA Region III, with assistance from the U.S. Army Corps of Engineers (USACE), Huntington District, conducted the first Five-Year Review (FYR) of the remedial actions implemented at Operable Unit 1 (OU-1) of the Ordnance Works Disposal Area (OWDA) Superfund Site (also known as Morgantown Ordnance Works), located in Morgantown, Monongalia County, West Virginia. The purpose of this FYR was to determine if the remedial actions that have been implemented are protective of human health and the environment. The review process consisted of the following activities: notification and involvement of stakeholders, review of existing and relevant documentation and data, identification and review of recent and new information, interviews with elected officials and those involved with site activities, and an assessment of site conditions. This report documents the review process and presents the findings, conclusions, and recommendations.

This FYR concludes that the remedial actions implemented at OU-1 of the OWDA site are protective of human health and the environment in the short term. The multi-layer landfill cover was determined to be currently effective in containing hazardous waste materials, the treatment wetland ponds appeared to be functioning as intended, and site access restrictions were found to be functional. Some deficiencies that could impact the future protectiveness of the remedy were noted during the initial and follow-up inspections. Several deficiencies were remediated by the Potentially Responsible Parties (PRPs) during the FYR process, though some concerns remain. Institutional controls have recently been developed by counsel from EPA, the State, and the PRPs but are not yet fully implemented. Implementation of the institutional controls will insure long-term protectiveness. The FYR report includes discussion concerning any remaining issues and provides recommendations for addressing them.

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FIVE YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site name: Ordnance Works Disposal Area Superfund Site		
EPA ID# WVD000850404		
Region: III	**State: West Virginia**	**City/County: Morgantown/Monongalia County**

SITE STATUS	
NPL Status: Final	**Remediation Status: Complete**
Multiple OUs? Yes	**Construction Completion Date: 09/09/2003**
Has site been put into reuse: ____Yes _X_No	

REVIEW STATUS	
Lead Agency: USEPA	
Author name: Christopher Corbett	
Author title: Remedial Project Manager, USEPA Region III	
Review Period: 1/2005 to 8/2006	
Date(s) of site inspection: May 12, 2005 and July 19, 2006	
Type of Review: Post-SARA	**Review number: 1 (First)**
Triggering Action: Actual RA Start at OU-1	
Triggering action date: 09/18/2001	
Due date: 09/18/2006	

GENERAL

- Institutional controls have been developed but are not fully implemented

LANDFILL COVER

- Signs of erosion and surficial slippage are present (e.g. small slope irregularities, depressions and channels in the cap, erosion of cover soil into drainage areas, collapsed silt fence)
- Vegetative cover is distressed in several areas
- Criteria to address ponding water and depressions require further evaluation

SURFACE WATER DRAINAGE SYSTEM

- Erosion of the landfill cap's southeastern toe has occurred due to surface water having flowed outside of the drainage channel
- Erosion of the slope has occurred along the fence near the southwest toe of the landfill and soil has been transported into the drainage system
- The drainage ditch along the western toe of the landfill cap is filled with excess soil material that has been eroded from the cap

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TREATMENT WETLANDS

- Discharge from the treatment wetlands is dark in color

Recommendations and Follow-up Actions

IMPROVE O&M ACTIVITIES

- Continue quarterly O&M inspections
- Perform regular site mowing and seeding, and cutting of small trees
- Ensure that two-feet of soil cover is maintained over all areas of the landfill
- Install movement markers on landfill slopes and institute a monitoring program
- Remove soil and silt from the drainage area at the toe of the landfill
- Re-grade ditches to improve drainage and control erosion
- Sample effluent directly after Pond 3 to determine why it is dark in color
- Evaluate O&M criteria to address areas of ponding water

OPTIMIZE REMEDY

- Sample landfill leachate prior to the wetlands to determine if the wetlands are needed for treatment

INSTITUTIONAL CONTROLS

- Implement recently developed institutional controls to protect the integrity of the cap, to prohibit residential development, to prohibit recreational use, and to prohibit operation of schools and child care facilities

Protectiveness Statement:

The PRPs have implemented the remedy at Operable Unit One in accordance with the remedial action objectives of the 1999 ROD, it is currently functioning as intended and the remedy is protective of human health and the environment in the short term.

1.0 INTRODUCTION

The U.S. Environmental Protection Agency (USEPA), Region III, with assistance from the U.S. Army Corps of Engineers (USACE), Huntington District, conducted this Five-Year Review (FYR) of the Ordnance Works Disposal Area (OWDA), pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Section 121(c), National Oil and Hazardous Substances Contingency Plan (NCP) Section 300.400(f)(4)(ii), and OSWER Directives 9355.7-02 (May 23, 1991), 9355.7-02A (July 26, 1994), and 9355.7-03A (December 21, 1995). The *Comprehensive Five-Year Review Guidance,* EPA 540-R-01-007 (USEPA, 2001), was consulted in preparation of this FYR. This is a post-Superfund Amendments and Reauthorization Act of 1986 (SARA) remedial action, enforcement-lead response action, statutory review. The triggering action for this statutory review is the initiation of the response action at Operable Unit 1 (OU-1).

This document will become part of the site file and is the first FYR for the OWDA site. This review evaluated the OU-1 remedial measures at the OWDA. The review process consisted of the following activities: (1) notification and involvement of stakeholders, (2) review of existing and relevant documentation and data, (3) identification and review of recent and new information, (4) interviews with those involved with site activities, and (5) an assessment of current site conditions.

This report presents the methods, findings, conclusions, and recommendations for the FYR of the former OWDA. The purpose of the FYR is to ensure that a remedial action remains protective of human health and the environment and is functioning as designed.

USEPA and USACE prepared this FYR report pursuant to CERCLA Section 121(c) and the NCP, 40 CFR 300.430(f)(4)(ii).

CERCLA §121(c) states the following:

> *If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section {104} or {106}, the President shall take or require such action. The President shall report to the congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

USEPA interpreted this requirement further in NCP, 40 CFR 300.430(f)(4)(ii) as:

> *If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.*

1.1 Purpose of Review

The primary purpose of this FYR was to evaluate whether the response actions undertaken at OU-1 are functioning as intended and remain protective of human health and the environment. Another objective was to identify and provide recommended remedies for any issues of concern associated with the implemented response actions. Section 121(c) of CERCLA, as amended by SARA, and §300.430(f)(4)(ii) of the NCP mandate that a post-SARA remedial action be reviewed no less often than every five years after initiation of the remedial action at sites where hazardous substances, pollutants, or contaminants remain at levels above those that allow for unlimited use and unrestricted exposure. This is the first FYR for the OWDA site.

1.2 Site Overview

The OWDA is part of the former Morgantown Ordnance Works (MOW), and is located approximately one mile southwest of the city of Morgantown, West Virginia, along the west bank of the Monongahela River. The OWDA is often referred to as the MOW. The property on which OWDA is located consists of approximately 670 acres. It is currently owned by Morgantown Industrial Park (MIP), a commercial and industrial complex. For the purposes of environmental investigation and remediation, OWDA is made up of three segments:

1) OU-1 encompasses a small portion of the MOW formerly used for disposal of tar and other wastes;
2) Two tracts of land currently owned and operated by Crompton Corporation (purchased from General Electric (GE) Company in 2003). The tracts are known as the North Plant and South Plant. Crompton/GE properties are not covered under the Superfund Program, but are covered by RCRA Corrective Action.
3) Operable Unit 2 (OU-2) covers all other parts of MIP, including abandoned MOW production areas, never used parts of the property (undeveloped woodlands), and currently leased parcels.

1.3 Current Status of Operable Units

All OU-1 remedial action work has been completed as part of the overall requirements of the Administrative Order for Remedial Design and Remedial Action, Docket No. III-90-27-DC, signed by USEPA on June 20, 1990. The named Respondents are Rockwell International Corporation, Olin Corporation, GE Specialty Chemical, Inc., and Morgantown Industrial Park Associates, Limited Partnership (MIPA).

OU-2 encompasses the entire northern portion of the site which was used for chemical manufacturing and is currently known as the Morgantown Industrial Park. OU-2 is not included within the site's NPL boundary. OU-2 addressed the remainder of the property, not including the currently active Crompton/GE facility, and was completed through a removal action performed in 1997 that included the following actions:

- Removal of water/debris from on-site sumps and pits;
- Off-site disposal of soils/sediments;
- Backfilling and re-vegetation of excavated areas; and
- Elimination of physical hazards.

USEPA has indicated that it does not expect further CERCLA responses for OU-2, as documented in the OU-1 ROD:

> "EPA does not anticipate further CERCLA response actions within OU-2 of the OWDA, expansion of the NPL listing to include OU-2, or issuance of a ROD for OU-2. Although cleanup actions deemed necessary by EPA at the GE properties within OU-2 will likely occur under RCRA, the Agency has reserved its right to perform or require CERCLA response actions in connection with such properties."

Since all of the contaminated material was removed, no operation and maintenance (O&M) of OU-2 is required.

2.0 SITE CHRONOLOGY

TABLE 1

OWNERSHIP CHRONOLOGY

1940 - 1945 E. I. Dupont de Nemours under lease to U.S. Government produced hexamine from ammonia and methanol	**1962 - 1978** Purchased and operated by Morgantown Ordnance Works, Inc. Leased to Sterling/Rockwell. 1964, Borg Warner purchase
1945 – 1950 Sharon Steel and Heyden Chemical leased property for coke plant and ammonia production	**1978 – 1982** Purchased and operated by Princess Coals, Inc.
1951 – 1958 Olin Mathieson leased property and produced ammonia methyl alcohol, formaldehyde, hexamine and ethylene diamine	**1982** Purchased Morgantown Industrial Park Associates (MIPA), Limited Partnership
1958 – 1962 Facility remained idle	**1982-present** Operated by MIPA

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TABLE 2

REMEDIAL ACTIVITIES/EPA DOCUMENTATION CHRONOLOGY

1981	**1996**
PCB Site Discovery. Two lagoons used for chrome plating waste disposal were excavated and disposed of by Rockwell Int'l	*Sept:* USEPA executed Consent Order for a Removal Action with the PRPs for OU-2
1982	**1997**
October: State Site Investigations	*March*: Treatability Studies for Bioremediation. Focused FS for OU-1
Sept: Preliminary Assessment	*June:* Removal Action complete for OU-2
1983	**1998**
April: USEPA Region III Field Investigation Team (FIT) site inspection and sampling of aqueous and soil sediment and air samples	*Sept:* Focused FS approved by USEPA
1984	**1999**
May thru June: PCB-containing drums disposed.	*June:* USEPA issues Proposed Remedial Action Plan identifying a new remedy for OU-1.
July: USEPA Region V FIT Team site inspection	*Sept:* Third (final) ROD
1986	**2001**
June: Site added to National Priorities List	*September:* Implementation of the Remedial Action for the 1999 ROD.
	Feb: Final Design approved
1988	**2003**
RI/FS completed.	*July:* Construction effectively completed
March: First ROD – selected cleanup actions for the disposal area of the plant, OU-1.	*September:* Final Inspection
1989	**2006**
June: Superfund Program Draft Proposed Plan	First Five-Year Review
Sept: Second ROD	

3.0 BACKGROUND

This document details a FYR conducted for the OWDA in Morgantown, West Virginia. The purpose of the FYR is to evaluate whether the response actions and original performance standards remain protective of human health and the environment. USEPA is the lead agency

and decision-maker for OWDA. USEPA and USACE conducted the FYR and prepared this report.

3.1 PHYSICAL CHARACTERISTICS

The OWDA is located in Monongalia County, West Virginia, on the west bank of the Monongahela River approximately one-mile southwest of the city of Morgantown. The site lies within the Appalachian Plateau Physiographic Province of northern West Virginia. The topography surrounding the site is rugged and dominated by the Chestnut Ridge - a long anticlinal mountain in the Allegheny Mountain Range located seven miles east of Morgantown. At the OWDA, the elevation of the ground surface in the areas investigated ranges from 975 feet above mean sea level (MSL) to 1010 feet above MSL. The Monongahela River is adjacent to the site at 825 feet above MSL, with a fairly steep cliff separating the river from the waste disposal area and former drum staging area. Approximately 4500-feet downstream of the waste disposal area, the city of Morgantown (Population 28,160 (US Census 2004 estimate)) operates a drinking water intake which supplies the city with the majority of its potable water. All surface runoff drains to the river. The actual land surface of the site has been altered by such activities as waste pond excavations, backfilling, removal of soil, and grading. Drainage swales that discharge both storm and surface water from the site extend beyond the fenced perimeter and ultimately discharge to the Monongahela River. The regional groundwater flow direction is also eastward towards the Monongahela River.

3.2 LAND USE AND RESOURCE USE

The original MOW property consisted of approximately 849-acres with the current site of approximately 670-acres owned by MIPA, approximately 24-acres owned by Monongahela Railway Company (an active railroad), and approximately 120-acres owned by various private companies or individuals. MIPA operates the site as a commercial and industrial complex by leasing property to various companies, and plans to continue to do so. Within one-mile of the site are several residences, one known private drinking water well, natural wetlands, livestock grazing areas, a junk yard, and Crompton employees located at the South Plant.

The landfill, treatment wetlands, and several shallow monitoring wells are within a fenced area with locked gates. A synthetic membrane cap was constructed over the former OU-1 landfill area in 2003. Ten groundwater monitoring wells exist around the capped area. The current owner of the OWDA does not allow trespassing to take place outside or inside the fenced area, although hunting and ATV trespassing does occur at times. Occasionally, a local resident's cattle escape from private pasture lands and graze in and around the swales and former lagoon area. MIPA employs a site superintendent who checks the property on a daily to weekly basis. The landfill and treatment wetlands area is not a likely candidate for redevelopment.

3.3 HISTORY OF CONTAMINATION

The property where the OWDA is located has been occupied and used for a variety of chemical production and industrial operations since the 1940s. Beginning in October 1940, the property was operated by E.I. DuPont de Nemours and Company (DuPont) under contract to the U.S. Department of War (now Department of Defense (DoD)). DuPont produced hexamethylenetetramine (i.e. hexamine) from ammonia and methanol and small amounts of "heavy water". The waste products resulting from the coal-burning manufacturing process of ammonia and methanol were sulfur and light oil (75-percent toluene and benzene). The primary on-site disposal area was the landfill in the southern portion of the facility, which was later designated as part of OU-1. In 1946, Sharon Steel operated a coke plant and Heyden Chemical operated an ammonia production facility. Beginning in 1951, Mathieson Chemical Corporation (now Olin Corporation) produced ammonia, methyl alcohol, formaldehyde, hexamine, and ethylene diamine at the site. Blue catalyst pellets, disposed on the ground surface throughout the site, were used as catalysts in the production of ammonia.

The U.S. Government sold the property in 1962 to Morgantown Ordnance Works, Inc. This private corporation leased a portion of the site to Sterling Faucet; Rockwell International acquired all assets of Sterling Faucet in 1968 and in 1973 the two companies merged. Rockwell/Sterling operated a chrome-plating facility until 1976. Rockwell had constructed two lagoons adjacent to the existing landfill to dispose of chrome-plating wastes. Princess Coals, Inc., acquired the property from MOW, Inc., in 1978, but did not actively lease or operate a chemical production facility. The MOW property was acquired from Princess Coals by a group of private individuals in 1982 that became Morgantown Industrial Park, Inc. and subsequently changed its name to Morgantown Industrial Park Associates, Limited Partnership (MIPA). MIPA continues to lease parcels to commercial businesses located in the industrial park.

In 1964, Weston Chemical Company, Inc., had purchased certain parcels of property from the industrial park and began operation of an organic chemical production facility. Weston was later acquired by Borg-Warner Chemical Corporation. In 1988, GE purchased the stock of Borg-Warner Specialty Chemicals, Inc., and the name was subsequently changed to GE Specialty Chemicals, Inc. (the North and South Plants). This 62-acre GE facility became Crompton Corporation in August 2003. The Crompton facilities are currently active, although GE Chemical has an agreement with USEPA to remediate under the RCRA Corrective Action.

The northern section of OU-1 was an abandoned, inactive landfill that was estimated to have a fill depth of 20 feet below-ground-surface (bgs) at its thickest location. No records exist on the quantities or types of material disposed of in the landfill. Eyewitness reports and direct observations revealed that the landfill contains construction debris, slag, ash, and catalyst pellets. Leachate from the landfill drained to the northeast into an existing wetland. The wetland drained directly to Swale 3, which eventually discharged into the Monongahela River. The sediment layer of both the wetland and the upper portion of Swale 3 were determined during the pre-design sampling event to have been impacted by heavy metals.

3.4 INITIAL RESPONSE

As a result of the chemical and industrial activities that occurred during the property's history, hazardous substances were generated, stored, and ultimately disposed of on the southern portion of the facility, thereby creating a landfill. This disposal area became known by USEPA as OU-1. OU-1 is a roughly six-acre site located approximately 0.5 miles south of the original main plant area and includes: (1) a Landfill, (2) Lagoons, (3) a "scraped area" used for shallow disposal of wastes, (4) a drum staging area, and (5) several streams.

In October 1980, the State of West Virginia requested that USEPA undertake a Remedial Investigation/Feasibility Study (RI/FS) of the site. Studies and remedial activities at the disposal site began in 1981. Oils, some contaminated with various levels of polychlorinated biphenyls (PCBs) from unused transformers used during the industrial activities at the OWDA, were stored in approximately 38 drums at various locations in the vicinity of the landfill/lagoon area. In addition, transformers and switch tanks, some of which contained no liquid reservoirs but were contaminated with PCBs, were discovered on the OWDA. A portion of the former Lagoon Area was excavated in 1981 to address metal-plating wastes disposed in two surface impoundments by Rockwell between 1970 and 1976. During this removal action, miscellaneous wastes including coal tars were observed in the lagoon. The site was first inspected by the USEPA Region III Field Investigative Team (FIT) in April 1983. The oil-containing drums and carcasses were removed and disposed of in 1984. A follow-up inspection was performed by the USEPA Region V FIT in July 1984. The area referred to as OU-1 was proposed for inclusion on USEPA's National Priorities List (NPL) on October 15, 1984 (47 FR 58476). USEPA divided the site into two areas or Operable Units:

(a) OU-1
- Inactive landfill
- Two lagoons and surrounding impacted area
- A 'scraped area' used for shallow waste disposal
- Former drum staging area

(b) OU-2
- Chemical manufacturing plant area

Final listing on the NPL occurred on June 10, 1986 (48 FR 40674). The named Potentially Parties (PRPs) were Rockwell International Corporation, Olin Corporation, GE, and MIPA.

The RI/FS was completed in 1988. As part of the 1988 RI/FS report, USEPA prepared an Endangerment Assessment (EA) for the OWDA, but Ecological Risks (e.g., the threats to organisms in the streams and wetland) were not evaluated at that time. Sampling events on the property during the Remedial Investigation (RI), the Phase II Interim Design Tasks, and Feasibility Studies (FS) occurred in various phases between 1980 and 1998. Sampling included groundwater, surface and subsurface soils, surface water, and sediment.

3.5 BASIS FOR TAKING ACTION

As part of the 1988 RI/FS report, USEPA prepared an EA for the OWDA in order to identify and define possible existing and future human health risks associated with exposure to the contaminants present in the various media at OU-1. The surface and subsurface soils, surface water, and sediment of OU-1 were all impacted to varying degrees by organic and inorganic contaminants. RI test pits in the Scraped Area revealed cinder-like backfill material, blue and black catalyst pellets, and yellow solid material.

USEPA considered the impact of site-related contamination on human health for both present and future potential exposure pathways and concluded that OU-1 presented an unacceptable risk to human health from soil and sediment contamination. Groundwater was not determined to be a contaminant exposure pathway. A Record of Decision (ROD) was issued in March 1988. The remedial alternative selected in the 1988 ROD - onsite incineration and containment, focused on source control of soils and sediments contaminated with carcinogenic polycyclic aromatic hydrocarbons (cPAHs) and heavy metals.

In November 1988, USEPA opened an additional thirty-day comment period for responsible parties to comment on the ROD. Based on comments received during this period, USEPA conducted a focused FS in 1989 to re-evaluate the alternatives described in the March 1988 ROD and to conduct a risk-based analysis of cleanup levels. During this analysis, USEPA specifically focused on eight contaminants: cPAHs, arsenic, cadmium, chromium, copper, lead, mercury, and zinc. The focused FS was completed in June 1989. A new ROD was issued by USEPA in September 1989, which selected "preferred" and "contingency" remedial actions for OU-1.

Remedial action was expected to involve excavation of soils and sediments and treatment via bioremediation with specific area soils consolidated into the landfill, which would then be capped. During treatability studies for the 1989 ROD, it was determined that bioremediation of polynuclear aromatic hydrocarbons (PAHs) would not adequately remediate the contamination at OU-1. Additional borings in the Scraped Area exposed visible tar at depths of down to eight-feet below ground surface (bgs) and detected concentrations of total cPAHs ranging from 94 parts-per-million (ppm) to 36,000 ppm. Some elevated levels of inorganic contaminants were detected in the 1988 RI but were not detected in the scraped area during the 1996 Phase II Interim Design Tasks. Further investigation during the Phase II Interim Design Tasks indicated cPAH concentrations ranging from 3.2 to 30,000 ppm, however, the inorganic contaminants detected during the 1988 RI were again not noted. In September 1999, USEPA issued a new and final ROD for OU-1, described below in Section 4.1.3.

A comprehensive Ecological Risk Assessment was not conducted during either the 1988 RI/FS or the 1989 FFS. In August 1998, following a review of the 1988 RI data, USEPA's Biological Technical Assistance Group (BTAG) concluded that inorganic contaminants were present in surface water and sediments within OU-1 at levels that are acutely toxic to potentially affected ecosystems. BTAG agreed that environmental protectiveness would be achieved if inorganic compounds in specific drainage areas (swales) were cleaned up to

background levels. There was no evidence that contamination from the OWDA affected the Monongahela River.

4.0 OU-1 REMEDIAL ACTION

As a result of the manufacturing operations conducted at the OWDA, hazardous substances were generated and subsequently disposed at OU-1. During the RI/FS in 1988, it was determined that the surface and subsurface soils, surface water and sediment of OU-1 were all impacted to varying degrees by organic and inorganic contaminants such as heavy metals and PAHs.

OU-1 is approximately six acres, is located approximately 0.5 miles south of the original main plant area, and was formerly used as a waste disposal area. OU-1 includes the following:

- Landfill: The northern section of OU-1 was an abandoned, inactive landfill estimated to have a fill depth of 20 feet at its thickest location. No records exist on quantities or types of material disposed of in the landfill. Waste materials identified on-site include construction debris, slag, ash, and catalyst pellets. Leachate from the original inactive landfill drained to the northeast into an existing wetland.

- Lagoons: Two lagoons, formerly used for chrome-plating waste disposal between 1970 and 1976, were excavated and disposed of in an approved landfill by Rockwell International in 1981.

- Scraped Area: This area was used for shallow disposal of wastes. The wastes identified were construction debris, oil-like stained soils, and catalyst pellets. Chemical analyses of soil and fill material in the scraped area indicated concentrations of metals, cPAHs, and arsenic.

- Drum Staging Area: Drums that were originally scattered throughout the site were collected, staged, and sampled in 1984 in the drum staging area.

- Streams: Three streams pass through the site. Analytical samples from surface water indicated relatively low concentrations of cPAHs, arsenic, lead copper, chromium, zinc, cadmium, and mercury, the parameters of concern. However, cPAHs were detected at relatively high concentrations at sediment sampling locations down-gradient of the Scraped Area and Landfill.

4.1 OU-1 Remedy Selection

Three RODs have been signed for OU-1. Each ROD superseded the previous ROD.

4.1.1 1988 Record of Decision

The remedy selected in the 1988 ROD, onsite incineration and containment, focused on source control of soils and sediments contaminated with cPAHs and heavy metals. The following remedial action objectives were identified in the ROD and were based on the results of the RI and the EA:

- "Soils in the landfill that exceed either the arsenic (20 mg/kg) or the cPAH (26 mg/kg) EA risk-based cleanup levels: contaminant concentrations for these parameters exceed the proposed cleanup levels at nearly every depth sampled. Since the landfill materials are very heterogeneous, contaminant levels above cleanup levels are likely to occur anywhere in the landfill. As a result, the entire area is subject to evaluation for remediation;
- Soils in the former Lagoon Area that exceed the cPAH risk-based cleanup level (26 mg/kg): these soils occur at depths of 4 to 6 feet in an area of approximately 0.7 acres;
- Soils in the Scraped Area that exceed either the arsenic (20 mg/kg) or cPAH (26 mg/kg) risk-based cleanup levels: such soils occur from the surface to a depth of 8 feet in an area of approximately 0.4 acres;
- Sediments in the surface-water area that exceed either the arsenic (20 mg/kg) or cPAH (26 mg/kg) risk-based cleanup levels: unacceptable levels of these contaminants occurred at five sediment sampling locations and appear to occur in sediment collection areas downstream from the waste management location" (USEPA, 1988).

Alternative 4 was selected because it offered "the best combination of effectiveness, implementability, and cost efficiency and (involved) use of a permanent solution." The selected alternative required on-site incineration with containment "to treat contaminated soils found in the former Lagoon Area and the Scraped Area, as well as sediments found in the settling zones of the three streams down-gradient of the waste management area. The remedy required the construction of a multi-layer RCRA cap on the inactive landfill. The cap would be extended into the subsurface clay to prevent both surface water infiltration and seeps out of the landfill area. The 1988 ROD also required 30-years of monitoring and an assessment of impacts of the remedial action to existing wetlands along with wetland mitigation.

4.1.2 1989 Record of Decision

In response to comments received from several parties, USEPA performed a Focused FS to re-evaluate the remedial action alternatives considered in the 1988 ROD and to perform a risk-based analysis of cleanup levels. This study was completed in June 1989.

The following remedial action goals were identified in the 1989 ROD:

- Reduce or eliminate organic contaminants in surface and subsurface soils and sediments that exceed the risk-based cleanup level for cPAHs of 44.7 mg/kg.
- Reduce or eliminate inorganic contaminants in surface and subsurface soils and sediments that exceed risk based cleanup levels for arsenic (88.8 mg/kg); cadmium (642 mg/kg); lead (500 mg/kg); copper (41,100 mg/kg).

- Reduce or eliminate the threat of migration of contaminants from the landfill.

In order to meet these goals, Alternative 8B was selected and included the following actions:

- Construct a RCRA equivalent cap over the existing landfill and surface management for erosion and sediment control;
- Excavate inorganic hot spots from the lagoon area and scraped area and solidify on-site;
- Excavate organic contaminants from the lagoon area, scraped area, and sediments and treat using onsite bioremediation in a treatment bed;
- Monitoring program for groundwater, surface water, and sediments; and
- Deed restrictions to prevent future residential development and to prevent construction on the capped area .

A contingency remedy, Alternative 6, was also selected, in case bioremediation treatment levels could not be met, the PRPs elected to execute Alternative 6 instead, or if the cost to implement Alternative 8B was much higher than expected:

- RCRA equivalent cap over existing landfill and surface management for erosion and sediment control;
- Deed restrictions to prevent future development of the capped area, and residential development in other areas;
- Excavate contaminated soils (outside landfill) for soil washing;
- Onsite soil washing and disposal of treated soils and sediments for lagoon area, scraped area, and dredge and dewatered stream sediments; and
- Monitoring program for groundwater, surface water, and sediments.

4.1.3 1999 Record of Decision

In June 1990, USEPA issued an administrative order requiring the PRPs to implement the remedy described in the 1989 ROD. USEPA later agreed to adopt a less stringent cleanup level for cPAH cleanup, due to a change in the cancer potency factor for benzo(a)pyrene in USEPA's Integrated Risk Information System (IRIS). In March 1997, the treatability studies for bioremediation were completed. It was determined that bioremediation was not only not cost-effective, but could not meet the cleanup standards set in the ROD within a reasonable timeframe. USEPA and the PRPs agreed that the soil washing contingency action was also deficient and a second focused FS was conducted in 1997 - 1998. After it was completed in 1998 (Law, 1998), the alternatives of the 1989 ROD were re-evaluated. USEPA issued another ROD in 1999 selecting a new preferred remedy for OU-1. The following remediation objectives were included in the 1999 ROD:

- "Eliminate the potential for direct contact with organic contaminants in surface and subsurface soils and sediments that exceed the cPAH Cleanup Standard;
- Eliminate the potential for direct contact with inorganic contaminants in surface and subsurface soils that exceed risk-based cleanup standards established in the September 1989 ROD;

- Reduce or eliminate inorganic contaminants in sediments to the cleanup levels set forth in Table 7 of the ROD;
- Reduce the potential for organic and inorganic contaminants in surface and subsurface soils and sediments to migrate to the groundwater or to migrate offsite;
- Reduce or eliminate the threat of direct contact with contaminants in the landfill; and
- Reduce or eliminate the threat of migration of contaminants from the landfill.

This new ROD for OU-1 was finalized in 1999, superseded the previous RODs, and included the following actions as part of the selected alternative, Alternative 5:

- Excavation of all visibly stained tar-like material from the Lagoon Area, Scraped Area, and stream sediments and transportation of this visibly contaminated waste material to an off-site thermal treatment facility for treatment;
- Excavation of all soils contaminated with cPAHs in excess of the cPAH Cleanup Standard and soils contaminated with inorganic compounds in excess of the inorganic cleanup standards set in the September 1989 ROD from the Lagoon Area and the Scraped Area and consolidation of this contaminated soil into the existing landfill;
- Excavation of all sediments contaminated with cPAHs in excess of the cPAH Cleanup Standards and sediments contaminated with inorganic compounds above background levels from the wetland area and drainage swales 1, 2, and consolidation of these sediments into the existing landfill;
- Backfilling, re-grading, and re-vegetating the excavations in the Lagoon Area and the Scraped Area;
- Restoration of streams and wetland areas where sediment was excavated;
- Construction of a multi-layer RCRA cap over the existing landfill;
- Long-term monitoring;
- Maintenance of the existing perimeter fence; and
- Implementation of institutional controls to protect the cap and prohibit residential development, recreational use, schools and child care facilities.

Note: The tar-like material (described in the first bullet) from the Lagoon Area, Scraped Area, and stream sediments was to be processed to meet power plant requirements for coal waste synfuel.

The cleanup standards are included in Table 6-1. USEPA issued this new ROD for OU-1 in September 1999.

4.2 Remedy Implementation

Based on the final ROD, the Pre-Design Work Plan and Pre-Design Investigation Report were prepared and submitted to USEPA by Environmental Strategies Corporation (ESC) in August 2000 and January 2001, respectively. Upon approval, the PRPs prepared the remedial design to guide the construction of the remedy. The remedial action specified in the 1999 ROD was divided into two segments in order to expedite implementation. The Tar and Soil Excavation Work Plan was approved by USEPA in July 2001. This allowed excavation to begin in September 2001 while the cap was being designed. The Final Design Report for

construction of the cap was submitted to USEPA in April 2002. The cap was not constructed until all excavation was complete. The work plans for both the replacement and treatment wetlands were appended to the Final Design Report.

ESC served as the general contractor and engineer for most of the remedial action. ESC was responsible for planning, oversight, reporting, sampling, and engineering. Sevenson Environmental Services (SES) excavated and reconstructed the swales and constructed the landfill cap. Kipin Industries was responsible for excavation, processing, and coordinating off-site thermal treatment of tar and transportation of soil to the landfill. Grant Tower Power Plant (GTPP) received and treated the processed tar by using it as fuel. Ecological Restoration, Inc., (ERI) designed and built the treatment wetlands and the replacement wetland.

4.2.1 Site Preparation

SES first cleared and grubbed the area and improved the access road. A tar processing area was constructed. Large vegetation was removed from the swales, and trees and stumps were removed from the landfill footprint. The latter were ground and mixed into the landfill sub-grade.

4.2.2 Excavation

Excavation of tar and soil in the lagoon, swales and scraped area began on September 18, 2001. Tar and tar-like materials were excavated and stockpiled separately from impacted soils, which were defined as soil that had no visible tar present but PAH or metals content suspected to be above the cleanup standards. This impacted soil was transported to the on-site landfill for disposal, while the tar and tar-like materials were kept on-site for processing. The excavation area had been divided into cells, and confirmation samples were taken from each wall and floor of the open cells to determine if the cells were "clean" and could be backfilled. If the cell was not clean, excavation continued. In some cells, excavation continued to a depth of nearly 30-feet bgs, due to the discovery of free-phase oil. In the Scraped Area, excavation volumes were more than double the original estimate due to construction debris being encountered. This material was placed into the landfill, because it did not include any tar or tar-like material.

Free-phase oil was discovered in the Lagoon Area in clay and rock. Approximately 10,000 cubic yards (CY) of soil and shale were excavated down a maximum depth of approximately 30 feet bgs. The oil appeared to be trapped within the layers of horizontal shale fractures, occasionally percolating through vertical fractures.

Two mounded areas near the scraped areas were investigated. Approximately 50 CY of tar was found in one of them, and approximately 800 CY of material was excavated. Confirmation samples verified that no additional tar in one mound required excavation. No excavation was necessary in the other mound, based on test pits. Small, isolated pieces of tar from throughout the site were processed like the other tar material.

During excavation of the three swales, tar was found only in Swale 1. Excavation down to six-feet bgs was required to remove the tar. Swales 2 and 3 were excavated to a depth of two-feet bgs. Also, the existing wetland at the intersection of Swale 3 and the railroad track was excavated. This is the wetland to which leachate from the former landfill drained. Excavation ceased when wall and floor confirmation samples yielded results below cleanup levels required by the 1999 ROD.

A total of approximately 45,000 CY was excavated, with 40,000 CY placed into the on-site landfill and approximately 5,000 CY of tar, tar-like material, and coke breeze mixed with additives shipped to GTPP. From the Scraped and Lagoon Areas, approximately 27,000 CY was excavated. About 10,000 CY of sediment was removed from the swales. SES removed 3,000 CY as part of the final work area excavation.

4.2.3 Processing of Tar and Tar-Like Material

Tar and tar-like material was stockpiled and mixed with additives to achieve the necessary 7,580-British Thermal Unit (BTU) value so that GTPP would accept this product as a coal waste synfuel. Initially, on-site coke breeze was added to increase BTU value, but carbon black was also added if the BTU value was extremely low. Sawdust was added if the material was too wet. Coal was also added to increase the BTU value. The mixed material was segregated to ensure that only pieces smaller than 3/8-inch were sent to GTPP. Pieces that were too large underwent additional mechanical agitation to achieve the necessary size reduction. The acceptable material was sampled and shipped to GTPP if Toxicity Characteristic Leaching Procedure (TCLP) testing results showed that the product was non-hazardous and met acceptable BTU values for the power plant. If a stockpile did not meet the requirements, it was reprocessed and resampled The first shipment was made in October 2001. Initially, GTTP would accept only 300 tons of material per day, but this was increased in April 2002. Tar processing activities were completed in July 2002 with the last of the product shipped to GTTP in August 2002. GTPP stockpiled some material, but all of it was burned by the end of 2002. A total of 14,623 tons of product was shipped.

4.2.4 Landfill Cap

During the summer and fall of 2002, the existing landfill material and excavated material and sediment were graded and compacted to meet the final design contour. The final cover system consisted of (1) a vegetated top cover 24-inches thick, (2) a lateral drainage layer of non-woven geosynthetic filter fabric bonded to both sides, and (3) a low-permeability layer with a 40-mil upper component and a geosythetic clay liner as the lower component. A gas vent layer was constructed at the highest point of the cap (ridge) and consisted of a stone trench and pipe for gas emissions. A leachate collection and conveyance system was constructed to collect leachate with initial leachate infiltration collected with a 4-inch PE corrugated perforated pipe and transferred to a 4-inch PE corrugated solid pipe for ultimate conveyance to the constructed wetlands. Placement of the final cover system began in May 2003. Drainage ditches were created around the perimeter of the cap to convey surface runoff and silt fencing was installed on the cap's face as a temporary measure prior to

establishment of vegetation. Landfill leachate is treated by use of constructed treatment wetlands below the leachate collection system at the toe of the landfill.

4.2.5 Treatment Wetlands

A collection system captures any leachate produced within the landfill and funnels it to a series of three constructed wetlands (also referred to as Ponds 1, 2 and 3 or cells 1, 2 and 3). These wetlands were completed prior to the landfill cap. The first pond is primarily a settling basin for heavier particulates. It has a limestone bed covered with organic compost. The leachate flows through the limestone, which helps precipitate out any iron. Cattails were established to ensure aerobic conditions.

The second pond is constructed of a two-foot limestone bed, two feet of leaf compost mixed with crushed limestone, and two feet of water. Water enters at the surface and flows downward to a collection pipe beneath the limestone layer. The purpose of this pond is to allow sulfate-reducing bacteria to thrive, which will reduce zinc and copper concentrations. This pond requires anaerobic conditions, therefore it contains no plants. Ongoing maintenance is required to ensure that this pond remains free of vegetation.

The third or polishing pond removes any remaining metals and biochemical oxygen demand (BOD) from the leachate. This shallow pond was planted with cattails to dissuade wildlife from entering it.

After leachate is processed through the final treatment wetland, effluent then drains from the wetland area to an area directly below the treatment wetlands referred to as Swale 3. Below Swale 3 is a functioning railroad track with an existing tile/culvert running under the track. After exiting the culvert, water continues to drain down an embankment, toward the river floodplains and eventually to the river.

4.2.6 Replacement Wetland

Seven-tenths of an acre of existing wetlands was disturbed in the vicinity of swale 3 as part of the remedial action, and were replaced with wetlands at a ratio of 1.5-to-1. ERI constructed a 1.05-acre wetland along the river in 2002.

4.3 Systems Operation/O&M

Site O&M requirements are contained in the Revised Final Operations and Maintenance/Post Closure Plan. This plan includes inspection of the landfill cover, wetlands, and associated drainage systems and sampling requirements for groundwater and treatment wetland effluent. Mowing of the cap is required. Additionally, sampling is performed on a quarterly basis. If any of the following deficiencies are noted, they will be addressed:

- Ponding water – greater than 100 square feet covered by a maximum of three inches of water;
- Differential settlement – a depression greater than 1.5 feet over a 20-foot span;

- Erosion on cap;
- Soil-dwelling animals;
- Erosion in drainage areas; and
- Land slide or slope failure

O&M consists of four components:

- Wetlands effluent sampling;
- Groundwater sampling;
- Wetlands inspection and removal of plants; and
- Landfill inspection and maintenance.

4.3.1 Wetlands Effluent Sampling

Effluent from the treatment wetlands was monitored monthly during 2003, and quarterly sampling will continue through 2008. The effluent must meet standards that were issued by the WVDEP Office of Water Resources (OWR). Effluent samples are analyzed for chemical oxygen demand, total organic carbon, total suspended solids, total phenols, cPAHs, cyanide (free and total), total and dissolved iron, copper, zinc, and hardness. Results of effluent sampling that are between the method detection limit (MDL) and the practical quantitation limit (PQL) have been qualified as estimated, which introduces a risk of false positive results.

The effluent is analyzed for semivolatile organic compounds (SVOCs), and no SVOC has been detected above the MDL. The levels for total recoverable phenolics have consistently been below MDLs, also. The effluent has remained in the acceptable pH range of 6-9 for all events. Although there are no criteria included in the O&M reports for total suspended solids, chemical oxygen demand, or total organic carbon, they are also monitored quarterly. Estimated levels of total cyanide equaled or exceeded the regulatory criterion of 0.005 µg/L during three of the nine sampling events conducted through October 2004, but the criterion is below the MDL so it cannot be determined if the total cyanide was actually present in the effluent samples. For metals, the level for iron was equaled once and exceeded once and the level for copper was never exceeded in 18 samples. Zinc, both total and dissolved, exceeded the regulatory criterion by varying magnitudes in February through May 2003 and again in December 2003 but has not exhibited exceedances since then.

Based on this data, it appears that the treatment wetlands have adequately treated any leachate from the landfill since they became established. It is presumed that the December 2003 zinc detection is anomalous, since all other samples after May 2003 show zinc well below these levels.

4.3.2 Groundwater Sampling

Quarterly sampling of groundwater has been performed from July 2003 to March 2006. Currently, 10 monitoring wells are included in the sampling program. Groundwater samples are analyzed for SVOCs and target analyte list (TAL) metals. Only seven of the wells are discussed specifically below, because these are the only wells that exhibited significant

detections. Results of groundwater sampling that are between the MDL and the PQL have been qualified as estimated, which introduces a risk of false positive results.

Two SVOCs have exceeded regulatory criteria during the O&M period. The SVOC 4-ethylphenol was exceeded the criterion of 180 micrograms per liter (µg/L) in shallow well MW-4 in the second round of O&M sampling. It has not been detected in any other well or during any other event, so this single result is probably anomalous. Bis(2-ethylhexyl) phthalate exceeded the criterion of 4.8 µg/L in the background bedrock well (DGW-1) and four shallow wells (MW-1, MW-2, MW-5, and MW-6) in the first round of O&M sampling, performed in August 2003. It was next detected above 4.8 µg/L in the fourth round (June 2004) in the same wells and in MW-4. It was detected above the criterion in MW-1 and MW-5 during the fifth round. Bis(2-ethylhexyl) phthalate was detected in MW-1 and MW-6 during the sixth round. During the seventh round, it was detected above 4.8 µg/L in MW-1 and MW-4. It was not detected above the criterion in the eighth round. It was detected in MW-4 and MW-6 above the criterion during the ninth round. It was only detected in MW-1 during the 10^{th} event (December 2005) and not detected during the 11^{th} event. Since the background bedrock (DGW-1) and shallow (MW-6) monitoring wells show these detections and are upgradient of the landfill, the landfill is likely not the source of this SVOC. Bis(2-ethylhexyl) phthalate detections may be a result of laboratory contamination, or they may be the result of other industrial activity on the site.

Six metals have exceeded regulatory criteria: antimony, arsenic, iron, manganese, thallium, and vanadium. None of these exceedances have occurred in the bedrock wells. Antimony was detected above its regulatory criterion of 15 µg/L in shallow well MW-4 only during the second O&M sampling event. This single detection is probably anomalous. Arsenic was detected in MW-2 above the regulatory criterion of 0.45 µg/L during the first and fifth events, in MW-4 during the second, third, fourth, fifth, seventh, eighth, and ninth events, and in MW-6 during the fourth, fifth, sixth, and ninth events. However, only one detection (MW-4, eighth event) exceeded the Maximum Contaminant Level (MCL) of 10 µg/L. Repeated detections in the background well MW-6 indicate that these detections are not related to the landfill. Iron has been detected above its regulatory criteria of 11,000 µg/L in MW-6, the background shallow well, during the third and fourth events and in MW-4 during the eighth event. Therefore, the iron detections do not appear related to the landfill. Manganese has been detected in five of the six shallow wells above its regulatory criterion of 730 µg/L multiple times during each sampling event, and is expected as it occurs naturally in groundwater in this area. Thallium has been detected once each above the regulatory criterion of 2.6 µg/L in MW-2 (eighth event), MW-4 (eight event), and the background well, MW-6 (fourth event). The infrequent detections appear to indicate that it is not landfill-related. Vanadium has only been detected once at a level greater than the regulatory criterion, in well MW-2 during the second event. The lack of other detections suggests that it is not related to the landfill.

Based on the first 11 rounds of quarterly O&M sampling, the cap appears to prevent leaching of contaminants into the groundwater. For the analyzed parameters (SVOCs and TAL metals), there is no significant increase in the landfill monitoring wells to levels above regulatory criteria.

4.3.3 Treatment Wetlands Inspection

It was planned that the treatment wetlands would be inspected every six months during the first two years of the O&M period. After this, the wetlands would be inspected annually. In order for the wetlands to operate as intended, vegetation must be kept out of Pond 2 to maintain anaerobic conditions but should flourish in Ponds 1 and 3 to ensure aerobic conditions and deter wildlife. Wildlife should be kept away from the ponds to prevent contact with landfill leachate. Erosion and sedimentation are also monitored.

No deficiencies were noted in the October 2003 treatment wetlands inspection, however, approximately five cattails were noted in Pond 2 in November 2003. During the June 2004 inspection, cattails, water weed, and pickerel that had been removed from Pond 2 had re-established. It was noted in the report that physical removal alone would be inadequate to eradicate these species from Pond 2. About 12 to 15 cattails were removed from Pond 2 in August 2004. Vegetation was cleared from Pond 2 in June 2006, though it was beginning to re-emerge as early as the site inspection in July 2006.

During the May 2005 FYR site visit, the ponds appeared to be in good condition, but the effluent from Pond 3 appeared black. This could be due to the naturally-occurring manganese that has been detected in the groundwater. However, a significant color change was noted just downstream of Pond 3 in the effluent ditch between the treatment wetlands and the culvert that carries the effluent beneath the railroad tracks. The level of staining decreased rapidly when moving down gradient from the site, and no odor or water sheen appeared to be associated with such staining.

4.3.4 Replacement Wetlands Inspection

The mitigation wetland was to be inspected every six months during the first two years of the O&M period. It was first inspected in August 2004 and no deficiencies were noted.

4.3.5 Landfill Inspection

The landfill cover is inspected quarterly. ESC prepared a checklist that is completed during the inspections and photographs of the landfill cover are taken. In November 2003, small erosion features and damaged silt fence were noted. In February 2004, it appeared that matting placed in November 2003 had stabilized the erosion features. Only minor erosion on the cap and in the swales was noted in August 2004. It was also noted during this time that the grass was well-established. No deficiencies were noted in October 2004.

During the May 2005 FYR site visit, deficiencies such as cracks, small channels and barren areas were noted, primarily on the long slope that faces the treatment wetlands. The gas vents on top of the cap are in good condition. The ditches that carry surface water away from the cap are too shallow in some areas, and have too much stone placed in them in other areas. It was also noted that the lid on one of the leachate observation ports was stuck closed due to apparent cross-threading of the cap on the riser pipe.

5.0 FIVE-YEAR REVIEW PROCESS

This FYR consisted of the following activities: the involvement of stakeholders, the review of existing and relevant documentation and data, the identification and review of recent and new information, an initial assessment of site conditions, actions by the PRPs to resolve deficiencies, a follow-up inspection, and the preparation of this report.

5.1 Administrative Components

This FYR was conducted by USEPA Region III with assistance provided by USACE Huntington District.

5.2 Stakeholder and Community Notification and Involvement

Notification of stakeholders of the FYR was performed by USEPA Region III. An advertisement was placed in the West Virginia Times on May 26, 2005 notifying the public of the preparation of the Five-Year Review Report. A similar notice shall be placed in the same paper informing the public of the completed report with a description of where the report can be located.

5.3 Documentation and Data Reviews

Reviews of relevant documents including RODs, correspondence, and O&M records, were conducted as part of this FYR. Remediation levels identified in RODs were also reviewed, and Applicable or Relevant and Appropriate Requirements (ARARs) and toxicity factors were checked for updates.

5.4 Interviews

Interviews were conducted with the following people as part of this FYR to obtain additional information and insight concerning the site:

- Mr. Steve Anderson, Senior Environmental Technician, Olin Corporation
- Mr. Stanley Haynes, Saltville, VA, Site Manager, Olin Corporation
- Mr. Don Kuhns, Site Manager, Morgantown Industrial Park
- Mr. Naresh Shah, Permit Writer, WVDEP
- Mr. Mark Slusarki, Project Manager, WVDEP
- Mr. Larry "Lumpy" Templeton, Site Superintendent, Morgantown Industrial Park

Records which detail the interviews that were conducted are contained in Appendix A.

Interviews were also conducted with citizens and local officials to evaluate their perspective of the remedy. The EPA conducted interviews on August 29, 2006. EPA spoke with 11 community members: the City Manager from Morgantown, the City Clerk from Westover, two County Commissioners from Monongalia County, and seven residents who lived or worked near the site.

Following is a table that presents the interview questions, responses and frequency of the responses. Some interview participants provided more than one answer to a question, so some of the response frequencies may total more than 11.

Table 3
Summary of Interviews with Citizens and Local Officials

Question	Response	Frequency of Response
1. How long have you lived in the site area?	• 0-10 years • 11-20 years • 21-30 years • 31-40 years • 41-50 years • more than 50 years	• 4 • 2 • 1 • 0 • 2 • 2
2. In general, what issues receive the most attention locally?	• Transportation and traffic issues • Housing issues • Pollution in river by lock-and-dam system • Preservation/land-use • Not sure • Mine acid drainage • Flood zone issues	• 6 • 2 • 2 • 2 • 2 • 1 • 1
3. How sensitive is the local area to environmental issues on a scale of 1 to 10, with 10 being the most sensitive?	• 1 • 2 • 3 • 4 • 5 • 6 • 7 • 7.5 • 8 • 9 • 10 • Not sure	• 0 • 1 • 0 • 0 • 1 • 0 • 2 • 2 • 3 • 1 • 0 • 1
4. Do you think there is community interest or concern about the operation or administration of this site?	• No • Some general interest • People do no know about the site • Not sure	• 5 • 3 • 2 • 1

5. Do you feel well informed about the site's activities and progress?	• No • Information is available, but do not choose to access it	• 10 • 1
6. What is your overall impression of the cleanup and administration of the site?	• Indifferent about the cleanup due to lack of knowledge • Positive impression	• 7 • 4
7. In your opinion, what effects, if any, have the site operations had on the surrounding community?	• Do not know of any	• 11
8. Are you aware of any events, incidents or activities such as vandalism, trespassing or emergency responses from local authorities?	• No • Historical incidences of vandalism • Stray hunters on property	• 9 • 1 • 1
9. Do you have any comments, suggestions or recommendations regarding the site's management or operation?	• No • Would like to see area re-used • Would like to see remaining buildings torn down	• 8 • 3 • 1

The majority of the people EPA spoke with seemed to know very little about the site. The elected officials knew the most about the site, but mostly from a historical perspective. A couple of them commented that they used to get information about the site, but had not heard much in recent years. This could be due to the fact that the site remedy has been implemented, and site activities are limited to operation and maintenance of the remedy as well as long-term monitoring. However, most of the residents, even the long-time residents, seemed mostly unaware of the site history and cleanup progress.

Despite the lack of information and/or knowledge about the site, most of the interviewees seemed to think that the community at large was not concerned about the site and had not experienced any ill effects because of the site. They noted that there was some general interest in the site, but that there was greater interest in other environmental issues or environmental concerns in general. A few people said that because Morgantown is a college town, there are a lot of highly educated people with academic interest in environmental science and public health.

It was noted by one of the elected officials that the former plant at the site was used to make heavy water for the first atomic bomb. He said Morgantown during the 1950s had a lot of industry, and the atmosphere was often hazy. He also said that paint would not stick on the exterior of residents' homes.

5.5 Site Conditions Inspection

Each quarter, the PRPs inspect the remedy at OU-1 and sample groundwater and wetland effluent in accordance with the approved *Revised Final Operation and Maintenance/Closure Plan* as well as the *Revision 1 Remedial Action Quality Assurance Project Plan* and the *Revised Final Sampling Plan*. The inspection results are forwarded to the USEPA and WVDEP Project Managers (PMs). Additionally, MIPA personnel visit the site from one to several times per week.

On May 12, 2005, representatives from USEPA Region III, WVDEP, and USACE Huntington District inspected OU-1 for this FYR. Deficiencies in the landfill cover, leachate collection system, treatment wetlands and surface water drainage system were noted and shared with the PRPs. The majority of the deficiencies were resolved prior to the follow-up inspection on July 19, 2006. Remaining issues are described in Section 7.0 and recommendations and follow-up actions are provided in Section 8.0.

6.0 TECHNICAL ASSESSMENT

6.1 Question A: Is the remedy functioning as intended by the decision documents?

Yes, the remedy is functioning as intended by the decision documents. All construction associated with the ROD is complete. The results of this FYR indicate that the remedy is functioning in accordance with design documents. The excavation and capping of contaminated soil has achieved the remedial objectives of preventing or minimizing the potential for human exposure to contaminated soil and groundwater and of preventing or minimizing the potential for future off-site migration of contaminants. Since the completion of the remedial action activities, the following site conditions relating to the implementation of the selected remedy have been achieved:

- The fence is intact and in good repair;
- The landfill cap remains intact;
- The monitoring wells are functional; and
- There is no evidence of excessive trespassing or significant vandalism.

Based on the first 11 rounds of quarterly O&M sampling, the cap appears to prevent leaching of contaminants into the groundwater. For the analyzed parameters (SVOCs and TAL metals), there is no significant increase in the landfill monitoring wells to levels above regulatory criteria.

The treatment wetlands are a passive treatment wetland system consisting of three cells (Ponds 1, 2, and 3) located at the toe of the landfill cap to treat leachate from the landfill. Pond 2 requires regular maintenance during warmer weather to remove aquatic vegetation. Field observations during the regular inspections include (1) recording wildlife occurrences within the system habitat and the potential for wildlife exposure to residual leachate, (2) assessment of sedimentation and erosion, and (3) assurance of adequate aquatic vegetation in

Ponds 1 and 3 and to confirm negligible or non-existent aquatic vegetation in Pond 2. The effectiveness of the treatment wetlands is being monitoring quarterly.

Maintenance activities related to the landfill, treatment wetlands, and fence are addressed in the post-construction monitoring program. Quarterly visits to the site by USACE Huntington District have determined that the quarterly sampling and treatment wetland activities are being properly carried out. There appeared to have been limited, if any activity to maintain the landfill cap prior to the spring of 2006. Regular maintenance such as semi-annual mowing, removal of silt from drainage areas, removal of small trees and brush, and re-vegetation of barren areas must continue to be evaluated and implemented as necessary.

Due to the fact that institutional controls have yet to be implemented for the property, the remedy prescribed in the ROD has not yet been fully implemented. Institutional controls have been developed and final discussions are underway between EPA, WVDEP and the PRPs.

6.2 Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy still valid?

Yes, the exposure assumptions, toxicity data, cleanup levels, and RAOs used at the time of the remedy are still valid. During this review, it was necessary to consider the four following types of assumptions made in the OU-1 ROD and how those assumptions may differ at the present time:

- Standards and "to be considereds" (TBCs);
- Cleanup levels;
- Exposure pathways; and
- Toxicity and other contaminant characteristics.

The cleanup levels included in the 1999 ROD as Tables 6 and 7 have been combined into Table 6-1 of this report. Table 6-1 also shows the current USEPA Region III risk-based concentrations (RBCs) for industrial soil for each of the ROD parameters.

6.2.1 Standards and TBCs

Twenty-three ARARs are identified in the 1999 OU-1 ROD. The two location-specific ARARs applied only during construction of the remedial action, so they cannot be reviewed. Of the 21 action-specific ARARs, 12 applied only during implementation of the remedial action, and therefore cannot be reviewed. The WV Groundwater Protection Act, 47 CSR 58-4.2, applies to the installation of monitoring wells, which has been completed, and the abandonment of monitoring wells, which is a future action; any future abandonment of wells shall comply with these regulations. Four of the other ARARs are RCRA sections, and only one of those, 265.117, had been amended since the signing of the ROD. The changes made to 265.117 are not substantial and therefore do not impact the selected remedy. The four remaining ARARs are WV state regulations. Portions of the WV Air Pollution Control (45 CSR 4) and Groundwater Protection Acts (47 CSR 58-4.9.d to 4.9.g and 47 CSR 58-8.1(c)) included as three of these remaining ARARs have been amended, but not since the ROD was

signed. The WV Environmental Quality Board establishes criteria for surface water quality via 46 CSR 1. This regulation has undergone several changes since the signing of the 1999 ROD, but the only pertinent, significant change is the requirement to analyze discharges for dissolved copper instead of total copper. Since sampling began in August 2003, the effluent from the treatment wetlands has been analyzed for both total and dissolved copper. There have been no other significant changes to the standards or TBCs since the 1999 ROD was signed that require changes to the remedy.

6.2.2 Cleanup Levels

Cleanup standards shown in the 1999 ROD and Table 6-1 are all risk-based. Changes in toxicity factors which could change these cleanup standards are discussed below. According to USEPA's website titled "Risk Assessment: Frequently Asked Questions," "EPA has no consensus RfD or CSF for inorganic lead, so it is not possible to calculate RBCs as (they) have done for other chemicals." According to the 1989 ROD, USEPA allowed up to 1000 mg/kg of lead in soil on industrial sites. In that ROD, this value was adjusted down to 500 mg/kg to account for the cumulative non-cancer effects on the same target organs by lead and mercury. The current screening value recommended by USEPA is 800 mg/kg for industrial sites. However, Table 3 of the USEPA report titled *Blood Lead Concentrations of US Adult Females: Summary Statistics from Phases 1 and 2 of the National Health and Nutrition Evaluation Survey* shows that when the data from all ethnic groups are combined, 1,200 mg/kg is an acceptable screening level. This is greater than the 1,000 mg/kg level used to develop the 500 mg/kg level included in the ROD, so the 500 mg/kg level should still be protective.

6.2.3 Exposure Pathways

Three exposure pathways were assumed in the 1999 ROD: ingestion of soil/sediment, dermal contact, and inhalation of dust. This is still accurate, as groundwater use is not anticipated. The future use scenario was evaluated in the 1999 OU-1 ROD with an industrial worker being the affected receptor, which is still accurate. If these standards were achieved, USEPA determined that the combined carcinogenic risk from exposure to arsenic and cPAHs will be 5 X 10^{-5}. This value is within the range of 1 x 10^{-4} to 1 x 10^{-6} established by USEPA as being representative of an acceptable risk. Sediment cleanup levels were established to protect ecological receptors and establish sediment levels at or near background.

The industrial park worker may occasionally visit the site and may be responsible for maintaining the remedy. Maintenance activities would probably include quarterly to monthly visits to the area for brief inspections of the cap and wetlands, mowing of the cap, and brief labor to address minor maintenance issues (e.g. removal of obstructions from the drainage ditches).

6.2.4 Toxicity and Other Contaminant Characteristics

USEPA Region III revises its list of RBCs semi-annually. Table 6-1 includes the current industrial soil RBCs for the 1999 ROD site contaminants. RBCs do not exist for carcinogenic

PAHs or mercury, so no comparison was possible for those contaminants. Only chromium and benzo(a)pyrene ROD levels were below the RBCs for the soil in the lagoon and scraped areas and the sediment. Therefore, increased lifetime cancer risks and HIs were recalculated for all 1999 ROD parameters, in accordance with USEPA's Risk Assessment Guidance for Superfund (RAGS). The current reference doses and slope factors were retrieved from the IRIS Database for Risk Assessment.

Cleanup levels were substituted for maximum detected concentrations in the risk-ratio screening process. The receptor evaluated was an industrial worker, as in the 1999 ROD. As performed for that ROD, soil and sediments were evaluated. Also as in the 1999 ROD, the compounds evaluated for the FYR follow:

- Total cPAHs (soil only)
- Benzo(a)pyrene (soil only)
- Arsenic
- Cadmium
- Chromium (sediment only)
- Copper
- Lead
- Mercury (sediment only)
- Zinc (sediment only)

For the FYR, each compound's effect for each medium on an industrial worker was evaluated. Protectiveness is assumed when ILCRs are less than $5x10^{-5}$ and HIs are not greater than 1. Based on these risk assessments, there were no unacceptable cancer risks. The combined ILCRs were $4.1x10^{-6}$ and $1.2x10^{-7}$ for the soil and sediment, respectively, which are both well within USEPA's acceptable risk management range. HIs for soil and sediment are 0.9 and 0.04, respectively, and no individual HI is greater than 0.5. Since HIs for all contaminants are less than 1.0, there are also no unacceptable non-cancer risks.

6.3 Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

No, though the landfill cover must be properly maintained to insure long-term protectiveness of the remedy. Regular maintenance such as semi-annual mowing, removal of silt from drainage areas, removal of small trees and brush, and re-vegetation of barren areas must continue to be evaluated and implemented as necessary.

7.0 ISSUES

One objective of this Five-Year Review was to identify and provide recommended remedies for any issues of concern with the implemented response actions. Issues noted during the FYR are discussed below.

7.1 General

Institutional controls have not yet been implemented at the site. Deed restrictions are necessary in order to protect the integrity of the cap, to prohibit residential development, to prohibit recreational use, and to prohibit operation of schools and child care facilities.

7.2 Landfill Cover

There are signs of erosion and potential slippage of surface soil. These include small slope irregularities, depressions and channels in the cap, and erosion of cover soil into drainage areas. There are also several areas indicating stressed vegetation.

7.3 Surface Water Drainage System

Barren land to the northwest of Pond 1 suggests that surface water has run off outside of this drainage channel during high flow events. Erosion of the landfill cap's southeastern toe has occurred due to surface water having flowed outside of the drainage channel. Surface water has also jumped the drainage ditch near a stone dike at the toe of the landfill and proceeded to the treatment wetlands. Near the southwest toe of the landfill, the slope adjacent to the site perimeter fence has little vegetation established on it; this has led to erosion of this slope and soil transport into surface water drainage system. The drainage ditch along the western toe of the landfill cap has an excessive accumulation of soil material that has been eroded from the cap.

7.4 Treatment Wetlands

The discharge from the treatment wetlands is dark and has stained soil and rocks to a point just downstream of Pond 3, then lightens significantly.

7.5 Monitoring Wells

No issues of serious concern related to the monitoring wells were noted.

8.0 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

Recommendations to address the issues noted in Section 7.0 are discussed below and are divided into five categories:

- Provide additional response actions
- Improve O&M activities
- Optimize remedy
- Institutional controls
- Conduct additional studies or investigations

8.1 Provide Additional Response Actions

No additional response actions are recommended at this time.

8.2 Improve O&M Activities

Regular mowing and cutting of small trees is necessary to prevent unacceptable vegetative growth on the landfill cover and within the treatment wetlands and drainage ditches. Minor issues, such as the distressed vegetative cover and soil and silt filling the drainage area at the toe of the landfill should be remedied by the PRPs as soon as feasible before they become major issues. The drainage ditches should be cleared of excess sediment accumulation at regular intervals, re-graded, and/or stone placed or removed as necessary to ensure that drainage system can adequately carry surface water runoff even during high rain events.

A more significant issue is evidenced by the signs of erosion on the landfill cover. Proper cap maintenance is required to ensure that a minimum of two-feet of cover is maintained for all areas of the cover. Areas experiencing erosion must be properly addressed and re-vegetated as necessary. Movement markers should also be installed and monitored quarterly to ensure that any future movement is detected in time to prevent any failure of the cover.

Sampling of the effluent immediately after Pond 3 should be performed in an effort to determine why the discharge is dark. This effluent should be analyzed for TAL metals and cPAHs.

8.3 Optimize Remedy

No optimization of the remedy is recommended at this time. If the leachate was sampled prior to the treatment wetlands, the extent of treatment that the wetlands are providing could be determined, or, it may be shown that the wetlands are not needed for treatment. If justified based on leachate characteristics, reducing the effluent sampling frequency or bypassing the treatment ponds entirely could reduce O&M costs.

8.4 Institutional Controls

Institutional controls have been developed but have not yet been implemented for the site.

8.5 Conduct Additional Studies or Investigations

No additional studies or investigations are recommended at this time. However, should bis(2-ethylhexyl) phthalate continue to be detected in the background groundwater monitoring wells, potential sources up-gradient of OU-1 may require investigation.

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Table 4 - Recommendations and Follow-Up Actions

Issue	Recommendations/ Follow-up Action	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness (Y/N)	
					Current	Future
Institutional Controls not fully in place.	EPA will continue working with WVDEP and the PRPs to implement the institutional controls.	EPA and PRPs	EPA	9/18/07	N	Y

9.0 PROTECTIVENESS STATEMENT

The PRPs have implemented the remedy at OU-1 in accordance with the remedial action objectives of the 1999 ROD, it is currently functioning as intended, and the remedy is protective of human health and the environment in the short term. Recently developed institutional controls must be implemented to insure long-term protectiveness of the remedy.

Protectiveness of the remedy will be verified by periodically inspecting the Site to assess the condition of the soil cap and other physical attributes of the remedy, by collecting ground water samples, and by checking on the emplacement of the required institutional controls during subsequent Five-Year Review Site inspections.

10.0 NEXT REVIEW

The next (i.e. second) FYR of remedial actions implemented on the OWDA should occur within five years of the completion date on the cover of the final version of this report. FYRs will continue as long as waste remains in place above levels that allow for unlimited use and unrestricted exposure.

APPENDIX A

INTERVIEW SUMMARIES

ORIGINAL

INTERVIEW RECORD

Site Name: Morgantown Ordnance Works
Subject: Five-Year Review Interview
Time: 11:00 am **Date:** June 29, 2005 **Type:** In person interview

Contact Made By: Erich Guy, Hydrogeologist, USACE-Huntington District

Individuals Contacted: Stanley Haynes Olin employee, Site manager of Saltville, VA
Steve Anderson Olin employee, Senior environmental technician

Telephone No: 256-509-8443 **Email:** seanderson@corp.olin.com
Street Address: P.O. Box 248 Charleston, TN 37310

Summary of Conversation, Questions:

1. What is your overall impression of the project? (general sentiment)

It's going fine as far as we know. Sampling and pond treatment seem to be performing well.

2. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the site? If so, please give purpose and results.

Yes, quarterly groundwater sampling. Also, Steve Marrow (Olin site manager, 423-336-4451) visits the site at least 1 time per year. Steve Anderson also conducts site inspections quarterly to make sure signs (private property) are up and the site perimeter fence is intact.

3. Have there been any complaints, violations, or other incidents related to the site requiring a response by your office?

None that we are aware of. There was a tree on the fence at one location along the southwest portion of the perimeter fence last quarter (during February 2005), and it was removed with no repair necessary.

4. Do you feel well informed about the site's activities and progress?

Yes; we'd observe and or/be informed if anything was out of hand.

5. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

None at this time.

ORIGINAL

INTERVIEW RECORD

Site Name: Morgantown Ordnance Works
Subject: Five-Year Review Interview
Time: 3:30 pm **Date:** July 6, 2005 **Type:** Telephone interview and e-mails

Contact Made By: Ken Woodard, Environmental Engineer, USACE Huntington District

Individual Contacted: Naresh Shah, Permit Writer
WVDEP Office of Water Resources
Telephone No: 304-926-0499 x1023
Street Address: 601 57th Street, SE, Charleston, WV 25304-2345

Summary of Conversation, Questions:

1. Could you please provide me with the discharge standards for OU-1?

There is no information in our files related to the subject facility since April, 2003.

2. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the site? If so, please give purpose and results.

I had last contact with Doug Taylor & Chris Matta in April, 2003 on the subject of discharge of pond water.

3. Would it be possible to get a copy of the discharge sampling results?

I do not know when construction of wetland was started or completed or when wetland was put in service. I also was not provided any data on quality of treated discharges from wetland.

4. How is the system performing (after the data was provided to him)?

The effluent quality is acceptable considering this analytical data. You may want to compare quality of influent (to wetland) with quality of effluent (from wetland) to evaluate performance (in terms of % removal for metals, COD and TSS) of wetland system.

ORIGINAL

INTERVIEW RECORD

Site Name: Morgantown Ordnance Works
Subject: Five-Year Review Interview
Time: 12:15 am **Date:** July 22, 2005 **Type:** Telephone interview

Contact Made By: Erich Guy, Hydrogeologist, USACE-Huntington District

Individual Contacted: Mark Slusarski, West Virginia Department of Environmental Protection, Office of Environmental Remediation

Telephone No: 304-926-0449
Street Address: 601 57th Street, SE, Charleston, WV 25304-2345

Summary of Conversation, Questions:

1. What is your overall impression of the project? (general sentiment)

Good overall impression. The project has gone very smooth once we came to an understanding with the PRPs regarding requirements that had to be met. There is a good relationship between WVDEP and USEPA and USACE.

2. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the site? If so, please give purpose and results.

Yes, there have been routine communications. We do our own inspections every couple of months, and these entail a site walkover; any concerns are reported to the USEPA. We have noted some concerns regarding erosion at the site recently.

3. Have there been any complaints, violations, or other incidents related to the site requiring a response by your office?

Not recently (i.e. in the past three years). There were some citizen concerns in the past regarding remedial actions and WVDEP responded to public opinions and concerns voiced by local residents at past public meetings. This was done in conjunction with USEPA.

4. Do you feel well informed about the site's activities and progress?

Yes, no problem.

5. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

There has been good communication between everyone and we'd like this to continue in the future now that the project is shifting more towards O&M.

ORIGINAL

INTERVIEW RECORD

Site Name: Morgantown Ordnance Works
Subject: Five-Year Review Interview
Time: 2 pm **Date:** May 13, 2005 **Type:** In-person interview

Contact Made By: Ken Woodard, Environmental Engineer, USACE Huntington District

Individual Contacted: Larry "Lumpy" Templeton
Site Superintendent for the Morgantown Industrial Park
Employed by McCabe Healey Properties, LP

Telephone No: 304-282-1401
Street Address: Morgantown Industrial Park, Morgantown, WV 26501

Summary of Conversation, Questions:

1. What is your overall impression of the project? (general sentiment)

They did a good job, but he would prefer that the land be flat.

2. Are you aware of events, incidents, or activities at the site such as vandalism, trespassing, or emergency response?

There have been some acts of vandalism, but they are "very seldom". Deer hunters sometimes trespass inside the fence.

3. How frequently do you check the site?

From one to several times per week

4. Is redevelopment of the site likely?

The land is "not useable" in its current condition. If it was clean and flat, the area could be used for a drag racing strip, housing, or a prison. As is, it will be left alone (i.e. undeveloped).

ORIGINAL

INTERVIEW RECORD

Site Name: Morgantown Ordnance Works
Subject: Five-Year Review Interview
Time: 11:45 am **Date:** June 29, 2005 **Type:** In person interview

Contact Made By: Erich Guy, Hydrogeologist, USACE-Huntington District

Individual Contacted: Don Kuhns, Site/project manager of the Morgantown Industrial Park
Employed by McCabe Healey Properties, LP
(Cecil Underwood is the CEO)
Telephone No: 304-282-1400
Street Address: Morgantown Industrial Park, Morgantown, WV 26501

Summary of Conversation, Questions:

1. What is your overall impression of the project? (general sentiment)

The RP's need to fix a slip in the borrow area and ensure water retention is done properly. Other than that the mission appears to be accomplished successfully.

2. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the site? If so, please give purpose and results.

No. People that own this park (i.e. the general partnership) have turned their back on the project.

3. Have there been any complaints, violations, or other incidents related to the site requiring a response by your office?

No.

4. Do you feel well informed about the site's activities and progress?

Absolutely.

5. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

No. Because we don't have much to do with it there is not really the basis for giving an opinion.

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6. What is your goal for the site, and is redevelopment likely?

The goal is to manage the daily activities of the park. Redevelopment is likely after all of the environmental stuff is done.

7. What type of land-use is permitted outside of the fenced area of the site?

No trespassing is allowed, although some hunting and ATV use inevitably occurs. One fellow allows his cattle to walk across part of the site occasionally.
